REMARKS

Favorable reconsideration of this application is requested in view of the foregoing amendments and the following remarks. Claims 1, 4, 6-12, 14-19, 33-46, 49, 51-59, 61-66 and 68-74 are pending in the application. Claims 2-3, 5, 13, 20-32, 47-48, 50, 60 and 67 are cancelled without prejudice or disclaimer. Claims 68-74 are newly presented.

The claims are amended in order to more clearly define the invention, support for which is found in the figures and related parts of the specification. Specifically, support for the recitation of generating a hybrid spread-spectrum signal is found in paragraph 0060 of the specification as originally filed. Support for the combination of direct sequence and fast frequency hopping is found in figures 1 and 2, together with associated paragraphs 50-51 and 52-53. Support for direct sequence modulation is found in paragraphs 0035-0036. Support for fast frequency hopping modulation is found in paragraphs 0035-0036. Support for the combination of direct sequence, frequency hopping (fast or slow) and polarization is found in figures 11 and 12, together with associated paragraphs 0071-0072 and 0042. Support for the combination of fast frequency hopping and time hopping is found in figures 5 and 6, together with associated paragraphs 0057-0059. Support for the changes to claims 8 and 55, and for new claim 72, is found in paragraph 0041 as originally filed. Support for the changes to claims 4, 35 and 52 is found in paragraph 0047, and claim 33 as originally filed.

Claims 1, 8 and 12-18 were rejected under 35 USC 102(e) as anticipated by Blodgett (i.e., US 2003/0034834). Claim 13 is cancelled without prejudice or disclaimer.

Blodgett (U.S. Patent Publication 2003/0034834) discloses a method of controlling an adaptive feedforward RF amplifier and providing an inobtrusive method monitoring and reducing the nonlinearity thereof by injecting low-level pilot or "tracer" tones at frequencies

within the operating bandpass of the amplifier chain. The pilot tones are subsequently detected and are used to make amplitude and/or phase adjustments in the amplifier stages to improve their linearity. Since the Blodgett unit may have multiple stages, and, therefore, multiple distortion-correction loops, the pilot tones within the band would tend to interfere or interact with each other. To solve this problem, the individual tones of Blodgett are modulated with Walsh or other orthogonal sequences to render the pilot signals mutually orthogonal and, therefore, non-interfering. The basic architecture disclosed in Blodgett does not support frequency hopping and in fact at no time explicitly mentions its use with spread-spectrum signals at all. The dither action of Blodgett is extremely low-level with respect to the signals being amplified (at most a few per cent), whereas the pseudorandom amplification of the instant invention is at a high level (from roughly 20 to 50% of the original signal's amplitude), strictly to improve the multipath immunity of the transmitted HSS signals. At these higher levels of the instant case, the technique of Blodgett would introduce objectionable interference into the signals being amplified, thus clearly defeating the stated purpose of Blodgett.

The Blodgett reference does not disclose or suggest the combination of direct sequence and fast frequency hopping, or the combination of direct sequence, frequency hopping (fast or slow) and polarization, or the combination of fast frequency hopping and time hopping.

Accordingly, withdrawal of this rejection is respectfully requested.

Claims 4-6, 19, 49, 53-55 and 59-67 were rejected under 35 USC 103 as obvious over Blodget in view of Ishifuji et al (i.e., US 6,084,905). Claims 5, 60 and 67 are cancelled without prejudice or disclaimer.

Ishifuji, et al., U.S. Patent 6,084,905 (hereinafter, Ishifuji) discloses both fast and slow frequency hopping, but teaches away from fast hopping due to the expense and complication of

fast-hopping synthesizer circuitry (Paragraph 1, lines 59-63). Ishifuji also focuses on the operational advantages of slow frequency hopping, particularly for good synchronization and AGC characteristics (paragraph 4, lines 38-57). Further, Ishifuji at no time even hints at hybrid spread-spectrum transmissions, incorporating either direct-sequence or time-hopping modulations. It is important to understand that the frequency hopping of Ishifuji is incompatible with the method and implementation of Blodgett.

The Blodgett and/or Ishifuji references do not disclose or suggest (alone or in combination) the combination of direct sequence and fast frequency hopping, or the combination of direct sequence, frequency hopping (fast or slow) and polarization, or the combination of fast frequency hopping and time hopping.

Accordingly, withdrawal of this rejection is respectfully requested.

Claims 2-3, 7 and 11 were rejected under 35 USC 103 as obvious over Blodget in view of Becker et al (i.e., US 6,726,099). Claims 2-3 are cancelled without prejudice or disclaimer.

Becker, et al., U.S. Patent 6,726,099 (hereinafter, Becker) discloses a bidirectional spread-spectrum RFID system using simple frequency hopping on the tag-to-reader RF link and standard direct-sequence spreading on the reader-to-tag transmissions (paragraph 4, lines 45-58; paragraph 6, lines 62-67 through paragraph 7, lines 1-7). The DS and FH modulations of Becker are never used on the same link, and no specific relationship between these component modulations is ever established. The use of Becker's bidirectional techniques in the system context of Blodgett is illogical, since Blodgett uses unidirectional signal-control loops to accomplish his invention; the use of Becker's signals would only degrade the system of Blodgett. Becker never discloses true time-hopping modulation in conjunction with fast frequency hopping, but instead pre-selects frequency channels and time slots for transmissions

to minimize mutual interference among tags in his system, although he does disclose an optional pseudorandom selection of his tag transmission time slots. Thus, Becker never discloses the concatenated hybrid spread-spectrum methods of the instant invention, only existing-art spread-spectrum transmission techniques.

The Blodgett and/or Becker references do not disclose or suggest (alone or in combination) the combination of direct sequence and fast frequency hopping, or the combination of direct sequence, frequency hopping (fast or slow) and polarization, or the combination of fast frequency hopping and time hopping.

Accordingly, withdrawal of this rejection is respectfully requested.

Claims 9-10 were rejected under 35 USC 103 as obvious over Blodget in view of Taga et al (i.e., US 2003/0175033).

Taga, et al., U.S. Patent Publication 2003/0175033 (hereinafter Taga) discloses a two-channel, high-speed optical data-transmission system exhibiting reduced inter-channel crosstalk by employing vestigial-sideband (VSB) modulation of two different-wavelength lasers, dual-polarization optical paths, and special optics at the receiver end to facilitate separation of the two data signals. The teaching of Taga is to achieve twice the normal data rate by using fixed or slowly optimized orthogonal-polarization filtering, VSB transmission using opposite sidebands, different laser wavelengths (carrier frequencies), and time-multiplexing to greatly relax the stringent (and very expensive) requirements for polarization-separating beam splitters to get low crosstalk between the two data channels. By using multiple separation methods simultaneously (i.e., frequency, time slot, sideband selection, and polarization), a double-speed, robust, imperfection-tolerant system is obtained with low-quality polarization optics, which greatly lowers the overall cost. However, Taga at no time discloses any specific pseudorandom

control of the transmitted polarized components (or of the power ratios). Taga teaches conventional separation of the polarizations to extract two distinct data signals, whereas the instant invention utilizes the unpredictable polarizations in high-multipath signal-propagation environments to extract a single data channel in whichever polarization (usually horizontal [H] or vertical [V]) exhibits less multipath degradation due to the deep nulls caused by the multiple signal reflections. Finally, the method of Taga has no logical application in the system of Blodgett, since Blodgett purely deals with electrical signals in amplifiers, which inherently have no polarization since they are conducted, not propagated signals.

The Blodgett and/or Taga references do not disclose or suggest (alone or in combination) the combination of direct sequence and fast frequency hopping, or the combination of direct sequence, frequency hopping (fast or slow) and polarization, or the combination of fast frequency hopping and time hopping.

Accordingly, withdrawal of this rejection is respectfully requested.

Claims 20-22, 24-31, 33-35, 37-44 and 46-48 were rejected under 35 USC 103 as obvious over Kolanek (i.e., US 5,886,573) in view of Nestler (i.e., US 5,862,069). Claims 20-22, 24-31 and 47-48 are cancelled without prejudice or disclaimer.

Kolanek (U.S. Patent 5,886,573) discloses a multistage envelope-elimination-and-restoration (EER) technique which permits high-efficiency amplification of an arbitrary amplitude/phase-modulated signal via nonlinear amplifiers. The amplitude (envelope) is separated from the signal, which is limited and amplified by a constant-envelope amplifier which preserves the signal's phase. Subsequently, the AM component is restored digitally at the output of the system by combining multiple constant-envelope stages which are differentially phase-modulated to reconstruct the original signal's envelope (amplitude). The vector-

separation process therein is well known and is not part of the instant invention. However, Kolanek is not germane to hybrid spread spectrum systems.

Nestler (U.S. Patent 5,862,069) discloses a four-quadrant multiplier and method, as well as a general recitation of existing four-quadrant multiplier art. However, Nestler is not germane to hybrid spread spectrum systems.

The Kolanek and/or Nestler references do not disclose or suggest (alone or in combination) the combination of direct sequence and fast frequency hopping, or the combination of direct sequence, frequency hopping (fast or slow) and polarization, or the combination of fast frequency hopping and time hopping.

Accordingly, withdrawal of this rejection is respectfully requested.

Claims 23, 32, 36 and 45 were rejected under 35 USC 103 as obvious over Kolanek (i.e., US 5,886,573) in view of Nestler (i.e., US 5,862,069) and further in view of Becker et al (i.e., US 6,726,099). Claims 23 and 32 are cancelled without prejudice or disclaimer.

The Becker reference does not obviate the above discussed deficiencies of the Kolanek and Nestler references. The Kolanek, Nestler and/or Becker references do not disclose or suggest (alone or in combination) the combination of direct sequence and fast frequency hopping, or the combination of direct sequence, frequency hopping (fast or slow) and polarization, or the combination of fast frequency hopping and time hopping.

Accordingly, withdrawal of this rejection is respectfully requested.

Claims 50-52 and 58 were rejected under 35 USC 103 as obvious over Blodgett (i.e., US 2003/0034834) in view of Ishifuji et al (i.e., US 6,084,905) in view of Becker et al. (US 6,726,099). Claim 50 is cancelled without prejudice or disclaimer.

The Becker reference does not obviate the above discussed deficiencies of the Blodgett and Ishifuji references. The Blodgett, Ishifuji and/or Becker references do not disclose or suggest (alone or in combination) the combination of direct sequence and fast frequency hopping, or the combination of direct sequence, frequency hopping (fast or slow) and polarization, or the combination of fast frequency hopping and time hopping.

Accordingly, withdrawal of this rejection is respectfully requested.

Claims 56-57 were rejected under 35 USC 103 as obvious over Blodgett (i.e., US 2003/0034834) in view of Ishifuji et al (i.e., US 6,084,905) in view of Taga et al. (US 2003/0175033).

The Taga reference does not obviate the above discussed deficiencies of the Blodgett and Ishifuji references. The Blodgett, Ishifuji and/or Taga references do not disclose or suggest (alone or in combination) the combination of direct sequence and fast frequency hopping, or the combination of direct sequence, frequency hopping (fast or slow) and polarization, or the combination of fast frequency hopping and time hopping.

Accordingly, withdrawal of this rejection is respectfully requested.

Other than as explicitly set forth above, this reply does not include acquiescence to statements in the Office Action. In view of the above, all the claims are considered patentable and allowance of all the claims is respectfully requested. The Examiner is invited to telephone the undersigned (at direct line 512-394-0118) for prompt action in the event any issues remain that prevent the allowance of any pending claims.

In accordance with 37 CFR 1.136(a) pertaining to patent application processing fees, Applicant requests an extension of time from February 18, 2006 to April 18, 2006 in which to respond to the Office Action dated November 18, 2005. A notification of extension of time is filed herewith.

The Director of the U.S. Patent and Trademark Office is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 50-3204 of John Bruckner PC.

Respectfully submitted,

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